DOCUMENT RESUME

ED 371 583 FL 022 054

AUTHOR Lotherington-Woloszyn, Heather
TITLE Do Simplified Texts Simplify Language Comprehension for ESL Learners?
PUB DATE 93
NOTE 17p.; In: Tickoo, M. L., Ed. Simplification: Theory and Application. Anthology Series 31; see FL 022 043.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Students; English (Second Language); Foreign Countries; Higher Education; *Instructional Materials; *Reading Comprehension; Second Language Instruction; *Second Language Learning; *Student Attitudes
IDENTIFIERS *Simplification (Language)

ABSTRACT

This paper examines how language is simplified for pedagogical purposes and reports on a study of English-as-a-Second-Language (ESL) learners' reactions to reading variously simplified and unsimplified texts. A total of 36 ESL learners of intermediate proficiency at the university-entrance level read, recalled, and commented on original texts and two versions simplified by different editors. Results indicated that none of the text versions was significantly better comprehended by the subjects. The subjects, however, were able to identify the simplified versions as simplified and rank the original versions as being the hardest to comprehend. The subjects also underrated their ability to comprehend the unsimplified texts and overrated their comprehension of the simplified texts. Thus, although simplification did not significantly affect text comprehensibility, it did affect the subjects' attitude about the text. Features of pedagogical simplification that aided and impeded language comprehension are identified. Four appendixes contain copies of the texts. (MDM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 371 583

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Wong, Kim
Wong

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

DO SIMPLIFIED TEXTS SIMPLIFY LANGUAGE COMPREHENSION FOR ESL LEARNERS?

Heather Lotherington-Woloszyn

FL 022054

DO SIMPLIFIED TEXTS SIMPLIFY LANGUAGE COMPREHENSION FOR ESL LEARNERS?

Heather Lotherington-Woloszyn

Abstract

Graded readers for ESL learners offer pedagogically simplified and stratified language for educational consumption. However, the nature of this simplified language deserves close inspection. ESL learners' reactions to variously simplified texts underscore the fact that simplifications are not equal, and they may not even be very simple.

This paper looks at how language is simplified for pedagogical purposes. It then reports the results of a study in which ESL learners' reactions to reading variously simplified vs unsimplified texts are explored, and concludes that for ESL learners of intermediate proficiency, simplified versions may be best used for their optical illusion qualities to introduce the content of authentic texts.

The paper identifies features of pedagogical simplification which effectively aided language comprehension as well as those which impeded comprehension or otherwise proved to be unuseful with the samples of ESL learners studied. It also notes how ESL learners' dependency on observable features of pedagogically simplified language may indicate weaknesses that should be addressed strategically in the ESL classroom and not by simplifying the texts they are reading.

Introduction

Publishers' catalogues of ESL resources offer the consumer a choice of simplified texts graded into levels of reading difficulty for ESL learners. This paper looks at how these texts are simplified for pedagogical purposes, and whether simplification improves text comprehensibility.

BEST COPY AVAILABLE

What is Pedagogically Simplified Language?

Simplified language, within the realm of simplified reading and listening texts intended mainly for pedagogical purposes[1], is a blanket term describing the language of texts which are created or adapted to be more accessible to the reader. As such, simplified language indicates a writing and editing process rather than a particular product. The products of simplification vary according to the framework within which writing and editing decisions are made.

Texts are simplified for pedagogical purposes not only for second language (L_2) learners but also for children who are learning to read in their native language (L_1)[2], and for learners with special educational needs.

How is Language Pedagogically Simplified?

The Publisher's Perspective.

Traditionally, text comprehensibility has been assessed in terms of the linguistic features of the text under the assumption that the ESL learner's difficulty in accessing written language is alleviated through linguistically adapting the text. Studies into the comprehensibility of L_1 texts have underscored the weaknesses in attributing language difficulty to the typical linguistic indices of readability vocabulary difficulty (usually measured in terms of word frequency), sentence, clause and passage length (Davison & Kantor, 1982). Researchers have cautioned that text comprehensibility relies also on features of conceptual readability which are not objectively measurable, such as the overall presentation of ideas, local discourse organization, needed background information, and matters shaping the reader's evaluation of information (Kantor & Davison, 1981); as well as literary qualities of the text (Liebling, 1986).

A recent study of North American publishers of simplified texts intended for ESL learners in Canada indicates, however, that publishers are not concerned solely with linguistic simplification (Lotherington-Woloszyn, 1989). It was found that publishers were considering the following in their simplification schemes:

- the linguistic features of text
- the subject content of the text
- the cultural and background knowledge required to read the text
- the characteristics of the learner and the learning environment
- the presentation and literary merit of the text
- the marketability of the text (Lotherington-Woloszyn, 1989).

A dual-scaling analysis of these considerations indicated the following observable trends in simplification:

> 1) an ESL text-centred approach, focussing on the linguistic features and the cultural references of the text;
>
> 2) a language arts learner-centred approach, focussing on the attractiveness and appropriateness of the text to the reading learner;
>
> 3) a functional social-centred approach, focussing on the sociolinguistic and stylistic treatment of the text. (Lotherington-Woloszyn, 1989, p. 212)

These trends do not necessarily reflect real, conscious approaches to simplification on the part of publishers, but rather statistically observable trends in the data.

The first trend shows that linguistic criteria are still considered to be important indices of text difficulty by publishers of simplified texts. However, the three trends identified accounted for only 52.13% of the total variance in the data, indicating a high degree of heterogeneity in the guiding criteria used by publishers in producing simplified texts.

In other words, publishers' approaches to simplification vary widely. Research on pedagogical simplification has not been sufficiently sensitive to this fact: simplified texts differ in what has been controlled or adapted and how.

The Editor's Perspective.

As Kantor and Davison (1981) point out in reference to L_1 simplified texts, adaptors do not slavishly hold to linguistic constraints in producing these materials. Editorial discretion plays a major role in the creation of a simplified text. With this in mind, a case study was made of the simplification strategies employed by two editors who adapted two one-page texts for young adult ESL learners of intermediate language proficiency (see Appendices A, B).

The participating editors were recommended by publishers of simplified materials on the market for ESL learners in Canada. They each adapted the two texts for the stated audience, according to their usual procedures, and then at a later interview, clarified and explained their editing decisions. These decisions are summarized in Figure 1.

Editor$_A$

reorganize

-order of information in text, paragraphs, and sentences

cut

-information that is redundant, unnecessary

-inappropriate stylistic devices

clarify

-implicit and unclear information by making it explicit

-necessary background information

-cohesive ties by using lexical repetition, reference; by avoiding ellipsis

shorten

-sentences to reflect 1 idea per sentence

-paragraphs if too many ideas are introduced per paragraph

simplify

-lexis by: in-text glossing; paraphrasing; using a more common word; providing a richer context for unfamiliar words; replacing a hard word with a defining phrase

Editor$_B$

cut

-information that is redundant, unnecessary, peripheral, and logically deducible

-difficult, inessential words

-names; quotes

replace

-conjunctive links between/within sentences to compensate for cuts

-imprecise, circumlocutory wording with simpler but semantically equivalent structures

-cohesive ties to agree with cuts affecting person, and number

clarify

-cohesive ties where compensation for deletions is needed

(Lotherington-Woloszyn, 1989, p.91)

Figure 1: This is what Editor$_A$ and Editor$_B$ did to simplify Texts 1 and 2.

It is evident from the editors' simplification strategies and from their simplified versions of Texts 1 and 2 (see Appendices C and D) that simplification of a text can result in markedly different versions.

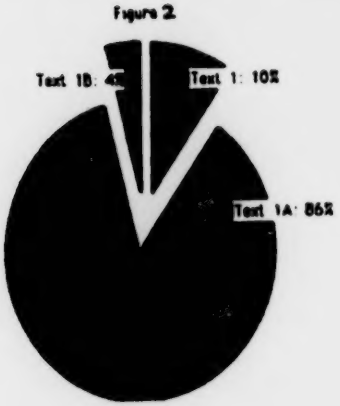
Are Simplified Texts more Comprehensible to ESL Learners than Unsimplified Texts?

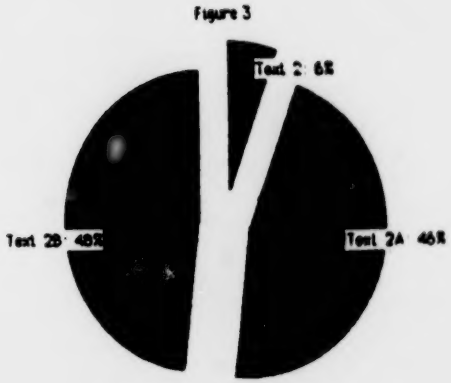
To explore this question, a study was conducted with thirty-six ESL learners at the university-entrance level who were assessed as having intermediate proficiency in English. The subjects, who were foreign students[3] enrolled in a preparatory English for academic purposes course at a university in Canada, read, recalled and commented on the texts which the editors had simplified, in all three versions: original (Texts 1, 2), simplified by $Editor_A$ (Texts 1A, 2A) and simplified by $Editor_B$ (Texts 1B, 2B).

The subjects were interviewed twice. During each sitting, they read the three versions of one text. The presentation order of both the texts and the versions was counterbalanced. The subjects orally recalled only the first version of the text presented to them at each sitting. They evaluated the relative difficulty of the versions and indicated the features of each version that they believed to be causing them comprehension problems with a highlighter pen.

The subjects' comprehension of the texts was assessed in terms of number of idea units recalled (cf: Carrell, 1985). Subjects' stated comprehension problems were also documented in terms of idea units.

The findings of the study were most interesting. T-test results[4] showed that none of the text versions was significantly better comprehended by the subjects ($p<.05$ against set of pairs). Subjects, however, identified the simplified versions as simplified; they ranked the original versions of both texts as being the hardest to comprehend, and they ranked both simplified versions produced by $Editor_A$ and the simplification of Text 2 by $Editor_B$ as being easiest, as can be seen in Figures 2 and 3.





Figures 2 and 3

Subjects' ranking of the easiest versions of each text.

However, subjects did not show significant differences in their comprehension of the text versions as measured in terms of number of idea units recalled.

Subjects underrated their ability to comprehend the unsimplified texts. They also overrated their comprehension of the simplified versions, especially those created by Editor$_B$. This was evident in the high number of problems reported per idea unit in the B versions of the texts during the discussion of what was unclear or difficult to understand in each text.

This sample of intermediate proficiency ESL learners thought that the simplified versions they read were easier to comprehend (with the exception of Text 1B) and that the original versions were more difficult to comprehend. However, they did not show significant differences in comprehension as measured by quantity of idea units recalled. Furthermore, they reported a high proportion of comprehension problems in the versions simplified by Editor$_B$, suggesting that they were fooled by appearances into thinking that what looked simplified was actually more comprehensible than the original. Part of this optical illusion may be attributable to reduced text length, as Editor$_B$ placed a high priority on the strategy of cutting out inessential information, which effectively reduced text length.

Optimal and Interfering Simplification Strategies

It is interesting to explore the features of text these ESL learners pinpointed as contributing to comprehension difficulties. Although subjects overwhelmingly attributed comprehension problems to difficult vocabulary items (77.9% of problems identified), the particular idea units they identified as unclear or problematic indicated other probable sources of interference in comprehension.

In particular, subjects reported having problems with idea units which had been reduced in the simplified versions through the deletion of redundant information. Thus, the redundancy maintained in the original texts was helpful to these ESL learners. Cutting out redundant information, a simplification strategy used by both Editor$_A$ and Editor$_B$, tended to impede comprehension.

The editors' text adaptations were of limited help where an unknown vocabulary item was pinpointed as causing comprehension difficulty. Subjects made poor use of in-text glosses, a simplification strategy used by Editor$_A$, thereby demonstrating inadequate reading strategies. Indeed, the fact that subjects evaluated text comprehensibility largely in terms of perceived vocabulary difficulty indicates that they may be placing too much attention on word meaning, and not enough on text meaning. This tendency to read words rather than text can be addressed strategically in the ESL classroom.

It is possible that these ESL learners had been taught to focus on vocabulary in reading L_2 texts. Certainly, pedagogically prepared texts with highlighted "new vocabulary" draw the learner's attention to the word level of meaning. Geva and Ryan (1985) have found that highlighting conjunctions in text significantly affects reading comprehension. It is worth questioning whether reading pedagogically treated text with highlighted vocabulary interferes with ESL learners' acquisition of good reading strategies.

A default of the interview procedure was that subjects were exposed to novel content in three successive versions with each text. Through this repeated exposure to content, the importance of background knowledge in contributing to text comprehensibility became evident to the subjects. The importance of background knowledge in reading has been widely reported in the research literature (Bernhardt, 1984; Carrell, 1983; Carrell & Wallace, 1983; Johnson, 1982; Koh, 1985; Swaffar, 1988). It is noteworthy that $Editor_A$ used the strategy of clarifying background information.

The results of this study suggest that simplification, if done at all, should be elaborative: focussing on supplying redundancy and necessary background knowledge. It also suggests that ESL learners may have a greater need for learning better reading strategies, such as identifying in-text glosses and learning how to use contextual guessing with unknown vocabulary, than for reading simplified texts. However, simplifications may provide access to the content of original texts by inducing ESL learners to read what they think is an easier version. In this regard, simplified versions used judiciously, may help to provide ESL learners with the background knowledge needed for confidently reading an original, unsimplified text.

Conclusion

Do Simplified Texts Simplify Language Comprehension?

In this study, simplification did not significantly affect text comprehensibility. However, simplification did affect the subjects' attitude to the text: ESL learners expected simplification to improve text comprehensibility. Certain strategies of simplification were found to have an observable effect, viz., the deletion of redundancy was found to have a negative effect on text comprehensibility, and the familiarity of background knowledge was found to have a positive effect.

On the whole, subjects demonstrated poor reading strategies by relying too much on word meaning. They were also fooled by the apparently simplified surface features of the simplified texts, such as vocabulary difficulty and text length, when in fact, these versions were not easier for them to comprehend than the original texts.

Do simplified texts help ESL learners to read? Yes, if they attract them to text but not *because* they are simplified, according to the findings of this study. In fact, it is worth investigating whether reading pedagogically simplified texts exacerbates ESL learners dependency on poor reading strategies by appearing to facilitate comprehension through simplification of language.

Language comprehension is complex; simplified texts may play a role in attracting ESL learners to read, but, in this study, simplification did not facilitate language comprehension.

REFERENCES

BERNHARDT, E B (1984). Toward an Information Processing Perspective in Foreign Language Reading. Modern Language Journal, *68(4), 322-331.*

CARRELL, P L (1983). Three Components of Background Knowledge in Reading Comprehension. Language Learning, *33(2), 183-207.*

CARRELL, P L (1985). Facilitating ESL Reading by Teaching Text Structure. TESOL Quarterly, *19(4), 727-752.*

CARRELL, P L and Wallace, B (1983). Background Knowledge: Context and Familiarity in Reading Comprehension. In M A Clarke & J Handscombe (Eds.), On TESOL '82: Pacific Perspectives on Language Learning and Teaching *(pp. 295-308). Washington, D.C: TESOL.*

DAVISON, A and Kantor, R N (1982). On the Failure of Readability Formulas to Define Readable Texts: A Case Study from Adaptations. Reading Research Quarterly, *17(1), 187-209.*

GEVA, E and Ryan E B (1985). Use of Conjunctions in Expository Texts by Skilled and Less Skilled Readers. Journal of Reading Behavior, *17(4), 331-346.*

JOHNSON, P (1982). Effects on Reading Comprehension of Building Background Knowledge. TESOL Quarterly, *16(4), 503-516.*

BEST COPY AVAILABLE

KANTOR, R N & Davison, A (1981). *Categories and Strategies of Adaptation in Children's Reading Materials. In A Rubin (Ed.), Conceptual Readability: New Ways to Look at Text (Reading Education Report No. 31, pp. 4-28). Washington, D.C: National Institute of Education, Centre for the Study of Reading.*

KOH M Y (1985). *The Role of Prior Knowledge in Reading Comprehension. Reading in a Foreign Language, 3(1), 375-380.*

LIEBLING, C R (1986). *Inside View and Character Plans in Original Stories and their Basal Reader Adaptations. Unpublished Manuscript. Cambridge, Mass: BBN Laboratories.*

LOTHERINGTON-WOLOSZYN, H (1989). *Simplified Texts, Comprehensible Input, and the English as a Second Language Learner: An Empirical Study. Unpublished Doctoral Dissertation, University of Toronto.*

LOOTHERINGTON-WOLOSZYN, H (In Press). *Simplification: The Questionable Role of Interventionist Language in ESL Reading Comprehension. In R Courchene, J I Glidden, J St. John & C Therien (Eds.), Comprehension-based Second Language Teaching/ L'enseignment Des Langues Secondes Axes Sur La Comprehension (pp. 471-498). Ottawa: University of Ottawa.*

SWAFFAR, J K (1988). *Readers, Texts and Second Languages: The Interactive Processes. Modern Language Journal, 72(2), 123-149.*

Notes

This paper is based on research conducted towards my doctoral dissertation. I dedicate this paper to the memory of the two people who helped me most in my doctoral research: my husband, Jarek Woloszyn, for his undying support, and my thesis supervisor, Professor Michael Canale, for his careful guidance through my study. May they both rest in peace.

I gratefully acknowledge the support of the Social Sciences and Humanities Research Council of Canada who funded the research reported in this paper.

1. Adapted reading and listening texts may be prepared for the purposes of general entertainment, as well, as in the case of abridged novels in print or audiotaped form.

2. Basal readers, usually written to conform to readability formulae are examples of simplified texts for L_1 children.

3. Subjects came from Asia, Latin America, Europe, Africa and the Middle East, and were native speakers of 13 different languages.

4. A two-tailed t-test using the Bonferroni method of testing pair-wise comparisons was used.

Appendix A : Text 1 (Original)

Text 1 : Telltale hair.

Do Cokeheads have hot hair?

The answer to that question holds a potential way out for employers who wish to test workers or job applicants for drug use but are reluctant to face the delicate task of asking for urine or blood samples. Not surprisingly, executives and assembly-line workers often balk at the indignity of testing. But people might object less to losing just a snippet of hair, particularly if it meant a less demeaning and more accurate method of drug screening. The question is relevant because scientists have discovered that human hair holds a permanent record of all chemicals that a person taken.

Los Angeles Chemist Werner Baumgartner has developed a new drug test that utilizes radiation. When performed on human hair, it reveals what drugs have been taken and, unlike blood or urine tests, shows when the chemicals were consumed.

Baumgartner and his partner, Psychopharmacologist Ronald Siegel, claim that the hair test is more reliable than urinalysis. The San Diego-based Navy Drug Rehabilitation Center has been using the test on an experimental basis since last December. At the same time, Baumgartner and Siegel are training technicians so that the test can be tried on a broader scale.

A fascinating sidelight of the research is that the test can be used on preserved hair samples from long-dead famous figures. Among samples that Baumgartner and Siegel have analyzed are locks belonging to John Keats, the 19th century poet. The test confirmed scholars' suspicions that the author of "Ode on a Grecian Urn" was an opium user.

(TIME, March 17, 1986)

BEST COPY AVAILABLE

Text 2 : Dangerous stowaways.

For almost 20 years scientists have charted the northward migration of the so-called "killer" bees. The aggressive insects are descendants of two dozen African queen bees which escaped during experiments in Brazil in 1957 and began to interbreed with indigenous bees in that country. Scientists had forecast that because of the insects' natural tendency to spread in all directions, they would arrive in the Southern United States by 1988. But when U.S. officials identified a colony of 50 bees found near Lost Hills, California, last month as Africanized bees, it became clear that the insects had arrived early and in a way no one had foreseen: aboard ships carrying oil-drilling equipment from Brazil. Meanwhile, in the Lake Ontario port of Oswego, N.Y., scientists are searching for Africanized bees which may have escaped from a colony found aboard a Brazilian freighter last summer and subsequently destroyed. Said entomologist Roger Morse, head of the upper New York state bees hunt: "When you realize the tremendous air and sea traffic, every place is a suspect."

The Africanized bees have been spreading northward at the rate of about 200 miles a year. Although their sting is no more toxic than that of the European honeybee found in North America, their wild swarms and repeated attacks against intruders have made them a threat in South America. Scientists say the bees will not survive the winter in latitudes higher than California or North Carolina. Still, they claim that interbreeding between the less productive Africanized bees and European honeybees could produce an insect that is less inclined to seek nectar and cross-pollinate crops. Said Kevin Ker, a pest-management specialist with Ontario's agriculture ministry: "Because the killer bee is less active, there is the potential to harm agriculture."

In fact, some scientists predict that a high level of breeding between the two species could result in an annual North American crop loss of as much as $58 million. As well, Africanized bees found in Oswego carried mites, parasites that feed on honeybees and can potentially destroy honeybee colonies. Said Ker of the Africanized bee: "It is really just like any pest. No one likes to hear it is in their area."

(MACLEANS, September 2, 1985)

BEST COPY AVAILABLE

Appendix C : Text 1_A (Simplified by Editor $_A$); Text 1_B (Simplified by Editor $_B$)

Text 1_A : Telltale hair.

Many employers wish to test workers or people applying for work to see if they use drugs. Until now, the only ways to test for drug use were urine or blood testing. Many workers did not like these methods. They made them feel embarrassed and undignified. Employers had a problem!

Now, along has come Werner Baumgartner, an American chemist. He has developed a new drug test that can be used on human hair. Using radiation, it shows what drugs have been taken into the body. It even shows when the drugs were taken. And those being tested lose only a snippet of hair, an easy and quick sample!

Baumgartner and his partner, Ronald Siegel, also say that this hair test is more accurate than urinalysis, the testing of the urine. And . . . the test can be used on the hair of long-dead famous people. Tests already show that what scholars have been saying about the nineteenth century poet Keats is true: he did use opium!

Text 1_B : Telltale hair.

Do cokeheads have hot hair?

The answer to that question holds a potential way out for employers who wish to test workers or job applicants for drug use but are reluctant to face the delicate task of asking for urine or blood samples. However, people might object less to losing just a snippet of hair, particularly if it meant a less demeaning and more accurate method of drug screening.

A Los Angeles chemist has developed a new drug test that utilizes radiation. When performed on human hair, it reveals what drugs have been taken and, unlike blood or urine tests, shows when the chemicals were consumed.

A fascinating sidelight of the research is that the test can be used on preserved hair samples from long-dead famous figures, for example, John Keats, the 19th century poet. The test confirmed scholars' suspicions that the author of "Ode on a Grecian Urn" was an opium user.

Appendix D : Text 2_A (Simplified by Editor $_A$);
Text 2_B (Simplified by Editor $_B$)

Text 2_A : Dangerous stowaways.

For almost 20 years, scientists have been charting the steady northward migration of the "killer" or Africanized bees. These insects are descendants of two dozen African queen bees which escaped during experiments in Brazil in 1957 and began to breed with bees in Brazil. Scientists expected the bees to arrive in the southern United States in 1988. And sure enough -- U.S. officials found a colony of 50 Africanized bees near Lost Hills, California, last month. But the bees had arrived early, and they had arrived aboard ships carrying oil-drilling equipment from Brazil!

Last summer, other sea-loving bees were found aboard a Brazilian freighter and were destroyed. Or so it was thought. Scientists are searching for Africanized bees which may have escaped destruction.

Because these bees seem to be able to travel using human transportation facilities, all of North America seems vulnerable to them. They have been spreading northward at a rate of about 200 miles a year. Scientists say the bees will not survive the winter north of California or North Carolina, but no one knows for certain.

Is the spread of these bees something to be concerned about? The sting of the Africanized bee is no more dangerous than that of the European honeybee found in North America. However, the bees' wild swarms and repeated attacks against intruders have made them a threat in South America. Also, breeding between the less productive Africanized bee and the European honeybees could produce a bee that is lazier -- a bee that will not actively seek nectar and will therefore not help to pollinate crops. Some scientists predict that this could result in an annual North America crop loss of as much as $58 million. Also, the bees which escaped destruction after leaving the Brazilian freighter have been found to carry mites, parasites that eat honeybees and can destroy honeybee colonies.

Kevin Ker, a pest-management specialist with Ontario's agriculture ministry says of the Africanized bee: "It is really just like any pest. No one likes to hear it is in their area." Perhaps he's underestimating the problem. What do you think?

BEST COPY AVAILABLE

For almost 20 years scientists have charted the northward migration of the so-called "killer" bees. The aggressive insects are descendants of two dozen African queen bees which escaped in Brazil in 1957 and began to breed with bees in that country. When U.S. officials identified a colony of 50 Africanized bees near Lost Hills, California, it became clear that the insects had arrived in a way no one had foreseen: aboard ships carrying oil-drilling equipment from Brazil. Meanwhile, scientists in Oswego, New York are searching for Africanized bees which may have escaped from a colony found aboard a Brazilian freighter last summer.

Although the sting of the Africanized bees is no more toxic than that of the European honeybee found in North America, their repeated attacks against intruders have made them a threat in South America. Scientists say the bees will not survive the winter north of California or North Carolina. Still, they claim that interbreeding could produce an insect that is less inclined to seek nectar and cross-pollinate crops. The result could be an annual North American crop loss of as much as $58 million. As well, Africanized bees found in Oswego carried mites, parasites that feed on honeybees and can potentially destroy honeybee colonies.